



1. Project Name: Kawaihae Deep Draft Harbor
2. Date of Inspection: May 3, 2005
3. Inspection Personnel:

	<u>Name</u>	<u>Agency/Office</u>	<u>Telephone No.</u>
a.	Dan Meyers	CEPOH-EC-T	438-8875
b.	Geoffrey Lee	CEPOH-PP-MC	438-8864



4. Discussion:

STATION	REACH	COMMENTS
0+07 to 0+48	#1	Root
0+49 to 1+56	#2A	Trunk
1+47 to 6+56	#2B	Trunk
6+53 to 11+49	#2C	Trunk
11+50 to 16+59	#2D	Trunk
16+60 to 21+53	#2E	Trunk
21+54 to 26+14	#2F	Trunk
26+15 to 26+64	3	Head



The major deficiencies at the time of the inspection were as follows:



- a. Sta. 0+42 to Sta. 1+07, OS, slight depression on the sideslope, no obvious signs of sliding, monitor.



- b. Sta. 0+70, OS, cracked armor stone at hinge.





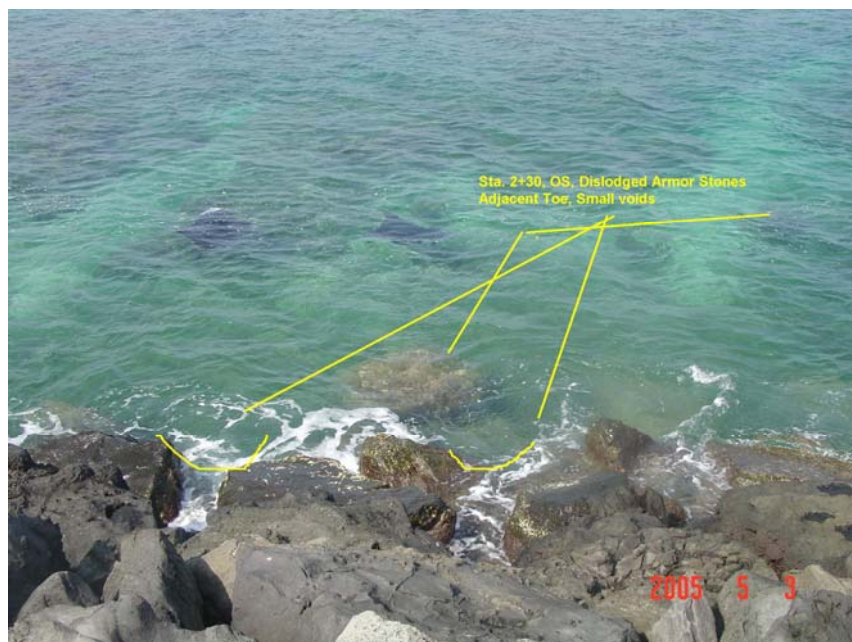
c. Sta. 1+50, CL, cracked armor stone, new this inspection.



d. Sta. 2+00, OS, 2 ea. cracked armor stone.



e. Sta. 2+10, HS, cracked armor stone @ hinge (adj. #3 dolphin).



f. Sta. 2+30, OS, 6-8 ea. Armor stones dislodged from structure at waterline, now resting adjacent to the toe of the breakwater.





g. Sta. 2+58, void in crest.



h. Sta. 3+00, CL, depressions extending along centerline.



i. Sta. 3+80, CL, cracked armor stone.

Note: White painted cross on HS hinge at Sta. 4+00.



j. Sta. 4+33 to Sta. 4+39, CL, three cracked armor stones at crest. Settling of armor layer along crest and HS hinge. One flipped armor stone on OS.





- k. Sta. 4+75, HS, cracked armor stone @ sideslope.



- l. Sta. 5+65, CL, cracked armor stone at crest.
- m. Sta. 6+00, OS, 2ea. dislodged armor stones resting 20 feet from toe, no obvious voids in sideslope. Unable to locate this year.



Note: White painted cross at Sta. 6+00.



n. Sta. 6+50, cracked armor stone.



o. Sta. 6+80, HS, split armor stone on sideslope.





p. Sta. 7+00, split armor stone at hinge.



q. Sta. 7+10 to Sta. 7+20, settling at crest.



r. Sta. 7+90, CL, settlement.

Note: White painted cross at Sta. 8+00.



s. Sta. 8+24, HS, dislodge stone at toe, likely from sideslope.

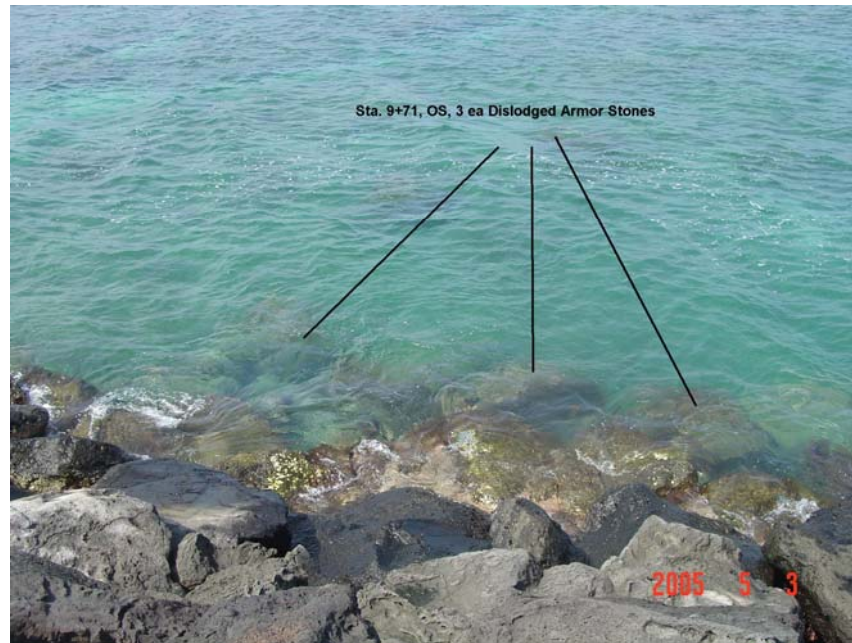




t. Sta. 9+26, CL, split armor stone.



u. Sta. 9+60, HS, cracked armor stone at hinge.



v. Sta. 9+71, OS, three armor stones have rolled off of the structure and into the water. Likely from structure sideslope at waterline.



w. Sta. 10+00, white painted cross.





x. Sta. 10+05, CL, cracked / split armor stone.



z. Sta. 10+50, HS, cracked armor stone.



aa. Sta. 10+64, OS, voids at toe with some settling of structure above that point.



bb. Sta. 11+00, CL Crest, Fractured armor stone. Verify Station on next inspection.

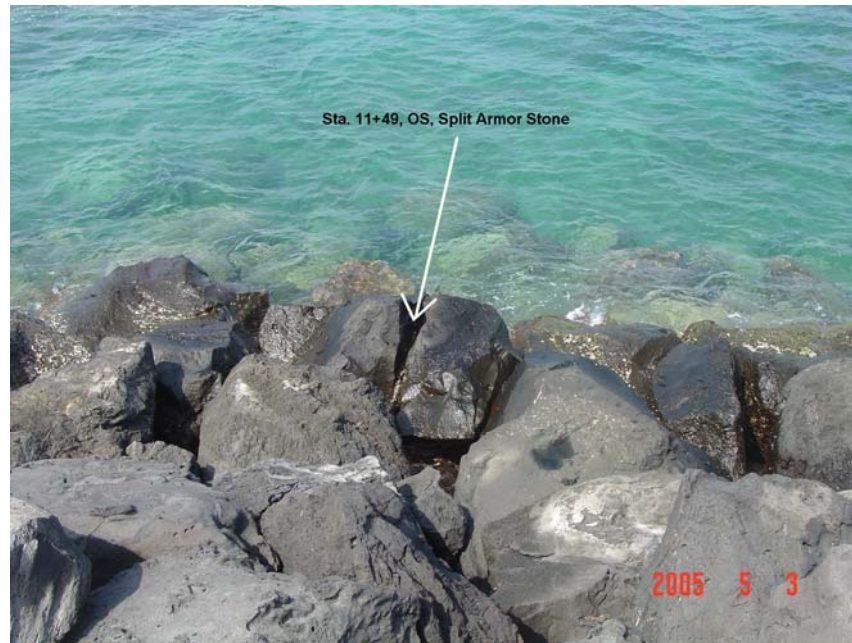




cc. Sta. 11+20, OS, split armor stone.



dd. Sta. 11+19, CL, wire rope thru armor stone.



ee. Sta. 11+49, OS, 1 ea. split armor stone, no void.



ff. Sta. 11+65, OS hinge, settling approx 20LF.



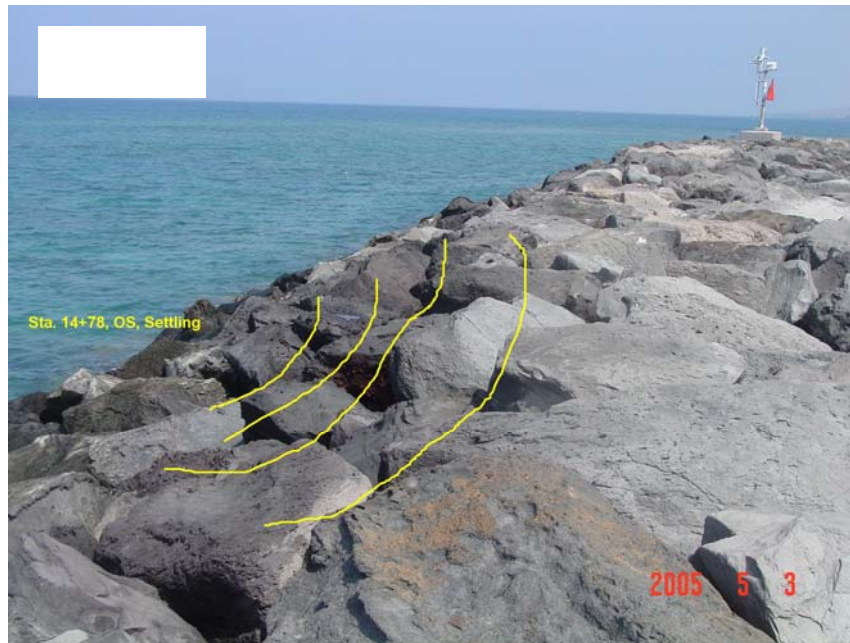


gg. Sta. 11+85, HS, Dislodged toe stones. No obvious voids.

NOTE: Cross @ Sta. 12+00



hh. Sta. 14+60, OS, Double split armor stone at hinge.



ii. Sta. 14+78 to Sta. 15+10, OS settling, approximately 20 feet of the sideslope beginning to extend into crest this inspection.



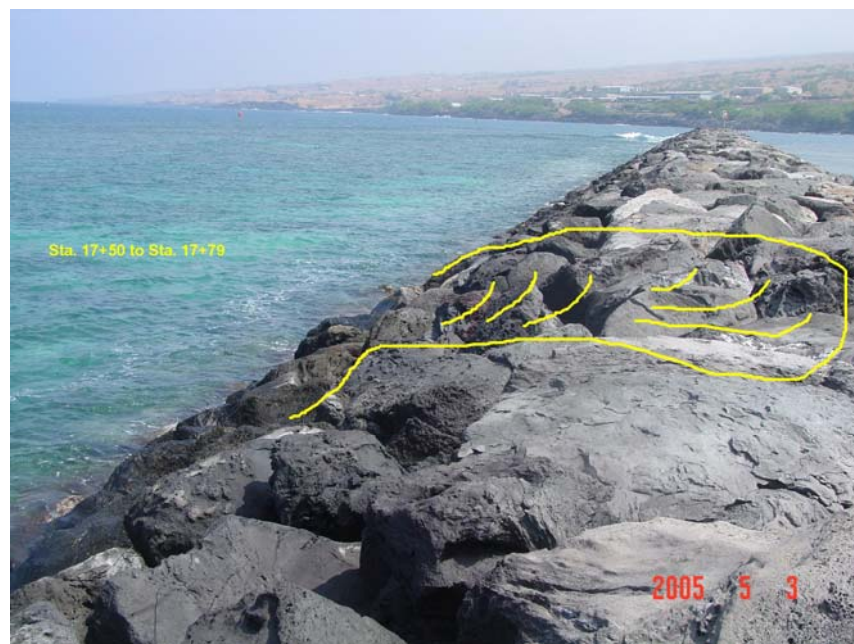
jj. Sta. 14+98, OS, cracked armor stone at waterline.

NOTE: Aid to Navigation at Sta. 16+83





kk. Sta. 17+00, OS, settling along the sideslope / hinge.



ll. Sta. 17+50 to Sta. 17+79, OS, sideslope and crest settling approximately 20 linear feet.



mm. Sta. 18+32, Crest, cracked armor stone.



nn. Sta. 18+67, CL, cracked armor stone.





oo. Sta. 18+97, crest settling (3' x 3').



pp. Sta. 19+15, Crest, two cracked armor stone.



qq. Sta. 19+39, Crest, fractured armor stone.



rr. Sta. 20+00, HS, three fractured armor stone (two OS and one HS).





ss. Sta. 20+10, OS, three fractured armor stone (two OS and one HS).



tt. Sta. 20+63, CL, cracked armor stone.



uu. Sta. 21+60, cracked armor stone.



vv. Sta. 20+85, OS, cracked armor stone and minor settling and bridging.





ww. Sta. 21+55, OS, 1 ea. dislodged armor stone and void.



xx. Sta. 23+18, HS, cracked armor stone and additional settling this year.



yy. Sta. 23+26, CL, cracked armor stone.



zz. Sta. 24+30, HS of CL, new split armor stone this year.





aaa. Sta. 24+71, CL, cracked armor stone.



bbb. Sta. 25+21, CL, hinge stone settling and three cracked armor stones.



ccc. Sta 26+07, OS, Missing toe armor stone (6 ea.), monitor.



ddd. Sta. 26+54, Reference photo.

eee. Sta. 26+37, OS, dislodged toe stone.





fff. Sta. 26+64, OS of Head.



ggg. Sta. 26+64, Head, missing armor stones at the waterline.



5. Findings / Conclusions: The primary damages at this structure is cracked armor stone and minor settling at the trunk and a few displace armor stone at the head, as shown in photographs. Several cracked stones and dislodged toe stones indicate wave action is continuing to deteriorate structure. Continue to monitor. The overall condition of the breakwater is FAIR, and functionality is GOOD. Navigation aids are in good condition.

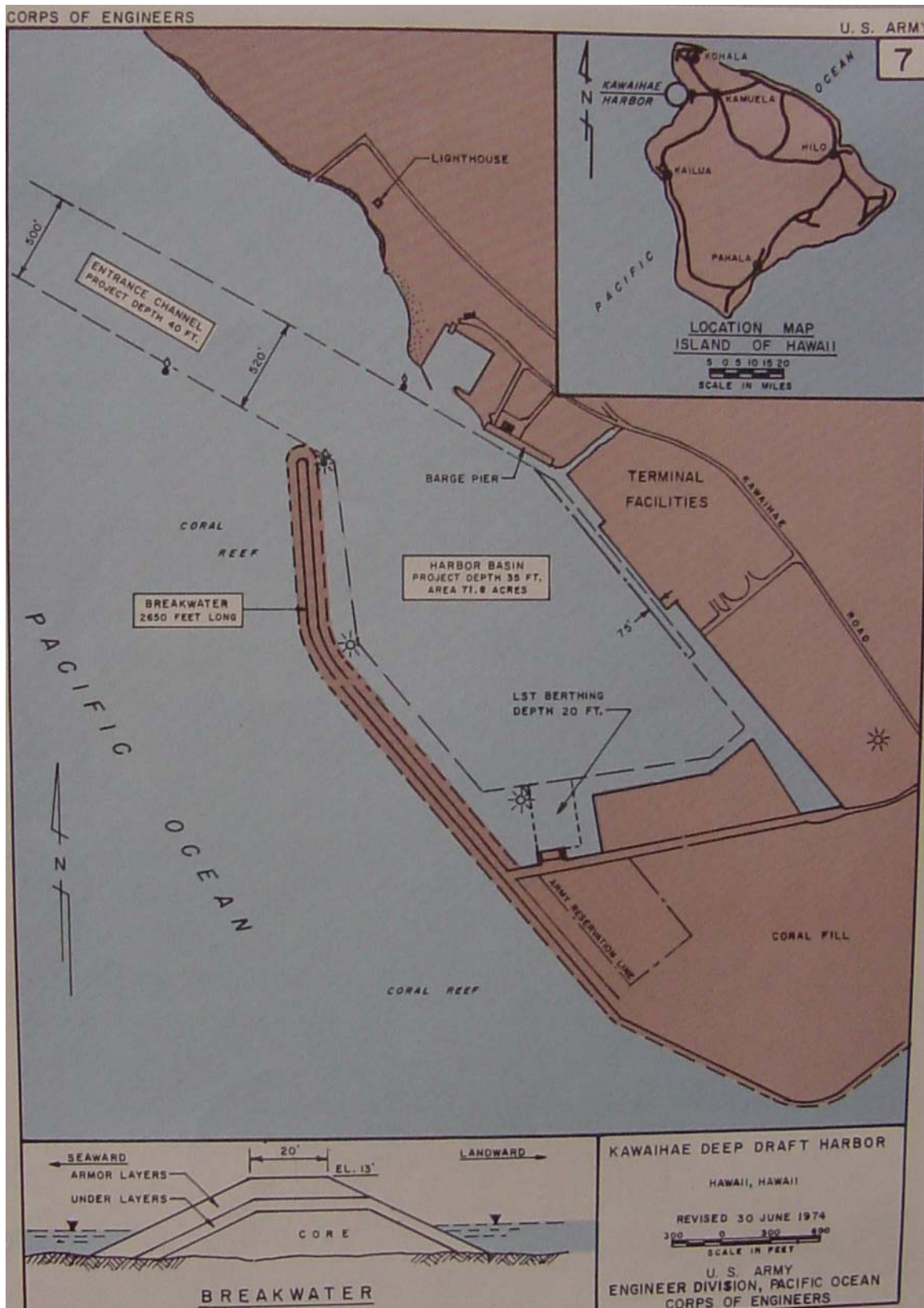
Signed: \_\_\_\_\_  
Dan Meyers, CEPOH-EC-T

Signed: \_\_\_\_\_  
Jim Pennaz P.E., Ch, CEPOH-EC-T

ATTACHMENTS:

1. Project Index Map
2. Project Summary Sheet







KAWAIHAE DEEP DRAFT HARBOR, HAWAII

CONDITION OF IMPROVEMENT 30 SEPTEMBER 1989

PREVIOUS PROJECTS: None.

EXISTING PROJECT: Authorized by the River and Harbor Act of 17 May 1950, and the River and Harbor Act of 27 October 1965. The project provides for:

a. An entrance channel 3,270 feet long, widens from 500 feet at seaward end to 520 feet within a distance of 2,100 feet then flaring to the basin width of 1,450 feet; entrance channel is 40 feet deep for the seaward 2,900 feet and transitions to a 35-foot depth at the harbor basin end;

b. A harbor basin 1,450 feet wide, 1,750 feet long on northeast side, 1,050 feet long on southwest side and 35 feet deep; and

c. A rubblemound breakwater 2,650 feet long with a maximum crest elevation of 13 feet about mean low water.

PROGRESS OF WORK:

Completed and Under Maintenance: Existing improvements were completed in July 1962. A construction contract for the enlargement of Kawaihae Harbor was completed in January 1973. Maintenance dredging was accomplished under contract in October 1972. Total material dredged was 24,825 cubic yards.

Work Remaining: None.

COST OF CONSTRUCTION:

	<u>New Work</u>	<u>Maintenance</u>	<u>Total</u>
<u>Completed Works:</u>			
United States Funds	\$5,983,501	\$61,800	\$6,045,301
Contributed Funds			
Required	61,496	0	61,496
Other	<u>191,336</u>	<u>0</u>	<u>191,336</u>
Total Costs	\$6,236,333	\$61,800	\$6,298,133

RANGE OF TIDES: The range of tide between mean lower low water and mean higher high water is 2.1 feet, and the extreme range is 4.5 feet.